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Proposed Amendments to the Drawings

Please see the attached proposed Replacement Sheet, which adds element 75 in Figure 5b. This element 75 existed in the originally-filed informal drawings of the parent patent application but was not transferred to the formal drawings when they were generated.

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REMARKS

Applicants have cancelled claims 59-61, 65, 67 and 68. Claims 69-94 are presently pending in this application.

Regarding the statement on page 2 of the Office Action that only one terminal disclaimer fee was filed, Applicants refer the Examiner to the authorization for payment that was submitted in the Amendment dated December 13, 2005 which authorization contains the text "deposit account authorization" and instructs the Commissioner to charge any needed fees to deposit account 50-1600. In any event, to the extent such payment has not yet been made, the Commissioner is hereby authorized to charge any needed fees to deposit account 50-1600.

In connection with the non-entering and disapproval of the newly filed drawings, Applicants respectfully submit that these figures, as modified and resubmitted herewith, are supported by the application as originally filed and comprise figure numbers matching those of the sheet they are intend to replace.

The Office Action objected to the drawings under 37 C.F.R. 1.83, stating that the drawings must show every feature of the invention specified in the claims. Applicants respectfully traverse this objection, and submit that the present drawings including a new Figure 5b show every feature of the invention specified in the claims. Regarding the Office Action statement that the "user control accepting a user input which specifies a cutting efficiency" must be shown or the feature(s) canceled from the claim(s), Applicants submit herewith a replacement drawing page in which Figure 5b containing element 75 is added. This element 75 existed in the originally-filed informal drawings of the parent patent application but was not transferred to the formal drawings when they were generated. Furthermore, Applicants have added the term "USER CONTROL" to Figure 5b just above the dial. Applicants accordingly submit that the queried language is shown

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in the drawings.

In the objection to the drawings, the Office Action further stated that the “outputting [of] atomized fluid particles from a plurality of atomizers” must be shown or the feature(s) canceled from the claim(s). In response, Applicants direct the Examiner’s attention to Figure 5a, which shows a plurality of atomizers for outputting atomized fluid particles. The paragraph bridging pages 12 and 13 of Applicants’ specification states that “the electromagnetically induced mechanical cutter ... comprises a nozzle 71, which may be interchanged with other nozzles (not shown). A second nozzle 72, shown in phantom lines, may also be used.” It is noted that this passage refers to the second nozzle 72 as being usable in addition to the nozzle 71, rather than as an alternative. Moreover, the Summary section of Applicants’ specification refers to controlling cutting parameters by “changing spray nozzles” and electronic energy source parameters” (emphasis added) rather than “changing the spray nozzle.” It is noted that this passage refers to the electromagnetic energy source in the singular and to the parameters in the plural. Furthermore, the Detailed Description section of Applicants’ specification states that “various nozzles 71 may be interchangeably placed on the electromagnetically induced mechanical cutter” (emphasis added) and that, “[a]lternatively, the physical structure of a single nozzle 71 may be changed.” Thus, the passage states that more than one nozzle 71 may be placed on the cutter, or that, in the alternative, the physical structure of only one nozzle may be changed.

As mentioned in Applicants’ prior correspondence, the symmetrical and identically-appearing nozzles 71 and 72 would appear to one of ordinary skill in the art not to be mutually exclusive and to be capable of identical and simultaneous operation. According to Section 2125 of the Manual of Patent Examining Procedure (MPEP), which speaks on an analogous issue of the interpretation of prior-art drawings, “the drawings must be evaluated for what they reasonably disclose and suggest to one of ordinary skill in the art.” The above language from Applicants’ specification uses the phrase “may also be

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used" (emphasis added), and does not use exclusionary language such as "may alternatively be used" or "may instead be used." Applicants thus submit that the queried language is shown in the drawings and supported in the text. This same section of the MPEP cites to a case which states that, while "patent drawings do not define the precise proportions of the elements ... the description of the article pictured can be relied on, in combination with the drawings, for what they would reasonably teach one of ordinary skill in the art." Applicants respectfully submit that in this and the other instances discussed herein the drawings are not relied upon to show fine and exacting to-scale details such as particular and precise sizes and exact dimensions, but rather to disclose exemplary embodiments of the invention such as are consistent with, for example, recitations in the current claims. Using the above standard for evaluating what the drawings disclose, which is what they reasonably disclose and suggest to one of ordinary skill in the art, the queried elements are indeed disclosed.

In any event, the Office Action, by its own words, appears to acknowledge that the current application, which is a divisional application of U.S. Patent No. 5,741,247 to Rizoiu et al. (the '256 patent), teaches the outputting of atomized fluid particles from a plurality of atomizers. In particular, on pages 6 and 7 the Office Action states no fewer than four times that the '247 patent, having a specification the same as that of the current specification, teaches, using multiple atomizers. Consequently, the queried language would appear to be disclosed by the drawings according to the Office Action's own analysis.

The Office Action stated that "an angle of incidence from a first one of the plurality of atomizers" must be shown or the feature(s) canceled from the claim(s). In response, Applicants refer to Figure 5a and submit that a person of ordinary skill in the art would understand a fluid particle's angle of incidence to be measured with respect to a reference item of the structure, such as the fiber tip, so that the fluid particle would exit the atomizer with an angle of incidence relative to that reference structure. Applicants thus

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submit that the queried language is shown in the drawings. In any event, the Office Action, by its own words, appears to acknowledge that the current application, which is a divisional application of U.S. Patent No. 741,247, teaches "an angle of incidence from a first one of the plurality of atomizers." In particular, on pages 6 and 7 the Office Action states no fewer than four times that the '247 patent, having a specification the same as that of the current specification, teaches, using multiple atomizers that are directed non-parallel to the laser axis. According to the Office Action's own analysis, the queried language would appear to be taught by the drawings.

The Office Action stated that elements of the phrase "an angle of incidence of atomized fluid particles from a first one of the plurality of atomizers is different from an angle of incidence of atomized fluid particles from a second one of the plurality of atomizers" must be shown or the feature(s) canceled from the claim(s). The Office Action also stated that language to the effect that "the fiber guide tube is disposed between the first atomizer and the second atomizer" must be shown or the feature(s) canceled from the claim(s), and further stated that "the output axes ... point[ing] from the respective atomizers to a general vicinity of the interaction zone" must be shown or the feature(s) canceled from the claim(s). The Office Action added that "the output axes intersect[ing] a longitudinal axis of the fiber guide within the interaction zone" must be shown or the feature(s) canceled from the claim(s). In response, Applicants refer again to Figure 5a and submit that a person of ordinary skill in the art would understand a fluid particle's angle of incidence to be measured with respect to an item of the structure other than the atomizer, such as the fiber tip, and would further understand that the angle of incidence of particles from nozzle 71 would be different than the angle of incidence of particles from nozzle 72. Applicants further submit that a person of ordinary skill in the art would understand the fiber 23 to be disposed between the nozzle 71 and the nozzle 72. One of ordinary skill in the art would also understand an atomizer's output axis to be oriented in a direction parallel with a direction at which the atomizer outputs particles and that, consequently, the output axes of the two nozzles 71 and 72 point to a general vicinity of the interaction zone

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59. One of ordinary skill in the art, understanding that an atomizer's output axis is oriented in a direction parallel with a direction at which the atomizer outputs particles would, consequently, recognize that the output axes of the two nozzles 71 and 72 point and thus intersect the longitudinal axis (see the dashed line) of the fiber guide 23 within the interaction zone 59. Thus, the queried language is shown in the drawings. In any event, the Office Action on pages 6 and 7 states that the parent '247 patent teaches using multiple atomizers that are directed non-parallel to the laser axis and whose axes converge near or at the interaction zone, so that the queried language would appear to be taught by the drawings according to the Office Action's analysis.

The Office Action stated that the feature of "atomized fluid particles from a first one of the plurality of atomizers combin[ing] with atomized fluid particles from a second one of the plurality of atomizers" must be shown or the feature(s) canceled from the claim(s), and stated that the structure of "an output axis of a first one of the plurality of atomizers [being] not parallel to an output axis of a second one of the plurality of atomizers" must be shown or the feature(s) canceled from the claim(s). In response, Applicants refer to Figure 5a and submit that a person of ordinary skill in the art would understand the atomizers to output particles in directions at which the atomizers are pointed, so that, based upon what is shown in the figure, at least some of the particles output from nozzles 71 and 72 would be combined. A person of ordinary skill in the art would also understand that, as a result of atomizers' output axes being oriented in directions parallel with directions at which the atomizers output particles, the output axes of nozzles 71 and 72 would not be parallel. Applicants thus submit that the queried language is shown in the drawings. In any event, the queried language would appear to be taught by the drawings according to the Office Action's statement on pages 6 and 7 that multiple atomizers of the '247 patent can be directed non-parallel to the laser axis with axes that converge near or at the interaction zone.

The Office Action stated that the structure of "atomized fluid particles

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simultaneously output from the plurality of atomizers into the interaction zone,” “a dial for controlling a repetition rate of the electromagnetic energy” and “a dial for controlling an average power of the electromagnetic energy” must be shown or the feature(s) canceled from the claim(s). In response, Applicants refer again to the paragraph bridging pages 12 and 13 of Applicants’ specification which states that a “second nozzle 72, shown in phantom lines, may also be used.” A person of ordinary skill in the art would understand the nozzles 71 and 72 to be capable of having identical structures since they are depicted with essentially identical images and to be capable of identical and simultaneous function since they are symmetrically positioned on the laser housing and are symmetrically oriented for the same purposes. Since the specification describes nozzle 71 as emitting fluid while the energy source is emitting electromagnetic energy, and since nozzle 72 would be considered by one of ordinary skill to be capable of being similarly disposed, oriented, and operated, nozzle 72 would be considered, too, to be capable of emitting fluid while the energy source is emitting electromagnetic radiation, so that atomized fluid particles are simultaneously output from the plurality of atomizers into the interaction zone. Applicants refer to Figure 5b and language from the full paragraph on page 18 of Applicants’ specification which states that “[t]he user input device for controlling cutting efficiency may comprise a simple pressure and flow rate gauge 75 (FIG. 5) or may comprise a control panel as shown in FIG. 6, for example.” Moreover, the second full paragraph on page 15 of Applicants’ specification states that the “control panel 77 ... may comprise ... a repetition rate 82” which is depicted, as would be understood by one of ordinary skill in the art, as a dial. Furthermore, the second full paragraph on page 15 of Applicants’ specification states that the “control panel 77 ... may comprise ... an average power control 81” which is depicted, as would be understood by one of ordinary skill in the art, as a dial. Applicants thus submit that the queried language is shown in the drawings.

According to the Office Action, structure corresponding to the language “wherein the plurality of atomizers is two atomizers” must be shown or the feature(s) canceled from

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the claim(s). In response, Applicants direct the Examiner's attention to Figure 5a, which shows a plurality of atomizers for outputting atomized fluid particles. As discussed above, the paragraph bridging pages 12 and 13 of Applicants' specification states that "the electromagnetically induced mechanical cutter ... comprises a nozzle 71" and that a "second nozzle 72, shown in phantom lines, may also be used." The nozzles 71 and 72 would appear to one of ordinary skill in the art to not be mutually exclusive. Applicants thus submit that the queried language is shown in the drawings.

The Office Action stated that "the output axes intersect[ing] a longitudinal axis of the fiber guide near or in the interaction zone" and "the output axes intersect[ing] in a general vicinity of the [laser] path near or in the interaction zone" must be shown or the feature(s) canceled from the claim(s). In response, Applicants refer to Figure 5a and submit that a person of ordinary skill in the art would understand an atomizer's output axis to be oriented in a direction parallel with a direction at which the atomizer outputs particles and that, consequently, the output axes of the two nozzles 71 and 72 point to and thus intersect the longitudinal axis (see the dashed line) of the fiber guide 23 within the interaction zone 59. A person of ordinary skill in the art would also understand an atomizer's output axis to be oriented in a direction parallel with a direction at which the atomizer outputs particles, so that the output axes of the two nozzles 71 and 72 would be considered to intersect the longitudinal axis of the fiber guide 23 within the interaction zone 59. Since the specification describes the axis of nozzle 71 intersecting the longitudinal axis of the fiber guide, and since nozzle 72 would be considered by one of ordinary skill to be similarly disposed and oriented, the output axes of both nozzles are disclosed as intersecting near or in the interaction zone. Applicants thus submit that the queried language is shown in the drawings. In any event, the queried language would appear to be taught by the drawings according to the Office Action's statement on pages 6 and 7 that multiple atomizers of the '247 patent can be directed with axes that converge near or at the interaction zone.

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Regarding the Office Action's objection to the Amendment filed February 7, 2005 as introducing new matter into the disclosure under 35 U.S.C. 132(a), Applicants submit that the Amendment did not introduce new matter for reasons including those set forth above. It is again noted that the Office Action appeared to acknowledge that the current application, which is a divisional application of U.S. Patent No. 5,741,247, teaches using multiple atomizers that are directed non-parallel to the laser axis and whose axes converge near or at the interaction zone. Consequently, the alleged new matter of the Amendment filed February 7, 2005 would appear, according even to the Office Action, to be taught by the original drawings of the current application.

Regarding the rejection of claims 68-94 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement, Applicants respectfully traverse this rejection for reasons including those set forth above. The Office Action states that the original disclosure is silent on "outputting [of] atomized fluid particles from a plurality of atomizers," "an angle of incidence from a first one of the plurality of atomizers," "an angle of incidence of atomized fluid particles from a first one of the plurality of atomizers is different from an angle of incidence of atomized fluid particles from a second one of the plurality of atomizers," "the fiber guide tube is disposed between the first atomizer and the second atomizer," "the output axes ... point[ing] from the respective atomizers to a general vicinity of the interaction zone," "the output axes intersect[ing] a longitudinal axis of the fiber guide within the interaction zone," "atomized fluid particles from a first one of the plurality of atomizers combin[ing] with atomized fluid particles from a second one of the plurality of atomizers," "an output axis of a first one of the plurality of atomizers [being] not parallel to an output axis of a second one of the plurality of atomizers," "atomized fluid particles [being] simultaneously output from the plurality of atomizers into the interaction zone," "a dial for controlling a repetition rate of the electromagnetic energy," "a dial for controlling an average power of the electromagnetic energy" "wherein the plurality of atomizers is two atomizers," "the output axes intersect[ing] a longitudinal axis of the fiber guide near or in the interaction zone" and "the output axes intersect[ing]

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in a general vicinity of the [laser] path near or in the interaction zone." However, since the original disclosure is the same as the disclosure of the '247 patent, and since the Office Action stated that the '247 patent teaches using multiple atomizers that are directed non-parallel to the laser axis and whose axes converge near or at the interaction zone, this rejection would appear to be without merit. Accordingly, Applicants respectfully request that this rejection under 35 U.S.C. 112, first paragraph, be reconsidered and withdrawn.

Regarding the rejections of claims 59-61, 67 and 68 in various combinations under 35 U.S.C. 102(a) and 102(b) as being allegedly clearly anticipated by various references, Applicants respectfully traverse these rejections. In an effort to expedite the prosecution of the present application, however, Applicants have cancelled these rejected claims without prejudice to rights of Applicants to pursue the inventions defined therein in continuation applications. Accordingly, the rejections under 35 U.S.C. 102(a) and 102(b) would now appear to be moot. Applicants thus request that the rejections under 35 U.S.C. 102 be reconsidered and withdrawn.

Regarding the rejections of claims 53-94 in various combinations under 35 U.S.C. 103(a) as being unpatentable in view of various references, Applicants respectfully traverse these rejections. Each of the rejections would appear to rely upon U.S. Patent No. 6,544,256 to Rizoiu et al. (the '256 patent) for a teaching of multiple atomizers having non-parallel orientations relative to the laser axis with axes that converge near or at the interaction zone. It would appear, however, that the '256 patent is not prior art, since it is the parent application of the present application. Indeed, the present application is a divisional application of the '256 patent. The beginning of the specification of the current application states that it is a continuation of U.S. Application No. 08/985,563, filed December 5, 1997 and entitled METHODS OF USING ATOMIZED PARTICLES FOR ELECTROMAGNETICALLY INDUCED CUTTING (now U.S. Patent No. 6,610,053), which is a divisional application of U.S. Application No 08/522,503, filed August 31, 1995 and entitled ATOMIZED FLUID PARTICLES FOR ELECTROMAGNETICALLY

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INDUCED CUTTING (now U.S. Patent No. 5,741,247), the contents of both which are expressly incorporated herein by reference. Since none of the remaining prior art references of record appears to provide the teaching of the '256 patent, namely, of multiple atomizers having non-parallel orientations relative to the laser axis with axes that converge near or at the interaction zone, Applicants respectfully request that the rejections under 35 U.S.C. 103(a) be reconsidered and withdrawn.

The Office Action rejected claims 53-94 in various combinations under the judicially created doctrine of obviousness-type double patenting as being unpatentable over various set of claims of 11 different patents. In response, Applicants have submitted previously and authorized the charging of appropriate fees for 11 Terminal Disclaimers, as discussed above. Applicants thus request that the Examiner reconsider and withdraw the obviousness-type double patenting rejections.

Applicants respectfully submit that the application is now in condition for allowance, and an early indication of the same is requested. The Examiner is invited to contact the undersigned with any questions.

Respectfully submitted,



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